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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,306	05/15/2006	Colin McKellar	3700.P0407US	8962

23474 7590 05/21/2010

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ART UNIT	PAPER NUMBER
2628	

MAIL DATE	DELIVERY MODE
05/21/2010	PAPER

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/564,306
Filing Date: May 15, 2006
Appellant(s): MCKELLAR, COLIN

CHAPMAN, TERRYENCE
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 02/16/2010 appealing from the Office action mailed 04/28/2009.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,747,649	Sanz-Pastor et al.	06-2004
6,493,858	Solomon	12-2002

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 14-16, 23, 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanz-Pastor et al. (U.S. Patent No. 6,747,649, "Sanz-Pastor", hereinafter) in view of Solomon (U.S. Patent No. 6,493,858).

As per claim 14, as shown in Fig. 12, Sanz-Pastor teaches *an apparatus for automatically generating a mipmap chain of texture images from a portion of texture image data for use in texturing a computer graphic image in a tile-based rendering system comprising:*

means for supplying texture data (Fig. 12, see col. 12, lines 22-47)*;*

means for allocating the data into at least one tile (col. 12, lines 48-55)*;*

means for storing the data of each tile in a tile buffer (storing in tile assembly buffer 1206 of Fig. 12, see col. 12, lines 48-65)*;*

means for filtering the tile buffer contents for each tile in turn to generate at least one lower level of mipmap data from the scene data (Fig. 14, col. 14, lines 36-61)*;*

means for temporarily storing each lower level of mipmap data in the tile buffer (see Fig. 12)*; and,*

Sanz-Pastor fails to explicitly teach *means for storing each lower level of the mipmap data in a system main memory, wherein the filtering means and the temporary storing means generate a predetermined number of mipmap levels to form the mipmap chain of the texture images.* However, Solomon teaches a method for allocating texture data and temporarily storing texture tile in a tile buffer (232, 234, or 236, see Fig. 2, col. 15, line 56 to col. 16, line 4), which is also stored in a main memory 104 as shown in Fig. 2. Solomon further teaches the filtering means and the temporary storing means generate a predetermined number of mipmap levels to form the mipmap chain of the texture images (col. 15, lines 1-10, and col. 16, lines 16-33, also Figs. 3, 8, and 9, and their disclosure).

Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Solomon in combination with the method as taught by Sanz-Pastor in order to increase the speed of processing and display processes (col. 26, lines 39-56).

As per claim 15, as cited above, Sanz-Pastor teaches *the tile buffer is used for temporarily storing image data prior to writing it to a frame buffer* (see Figs. 11a and 12).

As per claim 16, although Sanz-Pastor fails to explicitly teach *the frame buffer comprises a portion of the main memory.* However, it is well known in the art that frame buffer can be allocated in the main memory when a graphics processor does not have its own dedicated memory, such one as indicated in Solomon where a portion of main memory (included in the view 110) is used to update frame (screen) data (col. 7, lines 8-20).

Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Solomon in combination with the method as taught by Sanz-Pastor in order to make use of available computer resource (i.e. utilizing a portion of main memory as frame buffer).

Claim 23, which is similar in scope to claim 14, is thus rejected under the same rationale.

As per claim 26, although not taught by Sanz-Pastor, Solomon teaches the filtering means includes a box filter (col. 8, lines 18-26).

Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Solomon in combination with the method as taught by Sanz-Pastor because box filter requires much less computation, yet still provides acceptable quality (col. 8, lines 18-26).

As per claim 27, although not explicitly taught by Sanz-Pastor, Solomon teaches storing the texture data associated with the image to be shielded in the system main memory before generating the mipmap chain of texture images (storing texture data in main memory before generating mipmap shown in Fig. 9. It should be noted that the limitation "to be shielded" at best understood by the examiner because the specification does not give any specific definition.)

Therefore, it would have been obvious to one skilled in the art to utilize the method as taught by Solomon in combination with the method as taught by Sanz-Pastor in order to increase the speed of processing and display processes (col. 26, lines 39-56).

As per claim 28, Sanz-Pastor teaches means for overwriting a preceding level of the mipmap data in the tile buffer with a succeeding level of the mipmap data (i.e. updating texture data in the tile assembly buffer, see Fig. 12, col. 12, line 48 to col. 13, line 20).

Claim 29, which is similar in scope to claim 28, is thus rejected under the same rationale.

(10) Response to Argument

Appellant's arguments in the Appeal Brief has been fully considered but they are not persuasive. In response to Appellant's arguments that the cited reference Sanz-Pastor does not disclose the *means for filtering the texture data in the tile buffer for each tile and generating at least one*

lower level of mipmap data from the texture data, and also fails to disclose the *means for temporarily storing each lower level of the mipmap data in the tile buffer*, the examiner respectfully disagrees. In fact, Sanz-Pastor shows in Fig. 14, and col. 14, lines 36-61, which is reproduced as below:

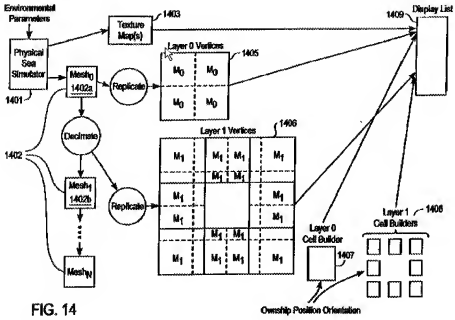

FIG. 14

In a preferred embodiment, *levels of detail are generated by filtering the simulated sea geometry into progressively sparser meshes*. This filtering process occurs for each timestep of the simulation....

...As with the terrain layers described above, the smallest sea layer should have the highest vertex density, and the largest should have the lowest vertex density. Because the layers cover progressively larger areas, larger layers will render larger numbers of repetitions of the sea simulation and *its respective filtered LODs*. Referring to FIG. 14, Physical Sea Simulator 1401 *creates new meshes 1402 and texture maps 1403 as time progresses* according to environmental parameters such as surface wind speed and direction. *Base mesh 1402a (mesh0) is decimated to produce mesh11402b, which covers the same physical area but with fewer vertices*. Mesh 1402b may then be further decimated to produce mesh2 and so forth, for as many LODs are required. *The meshes are then replicated into layer vertex buffers according to the number of*

copies of the mesh are required to cover the area of corresponding layer. This is shown in vertex buffers 1405 and 1406…(emphasis added, col. 14, lines 36-61).

As can be seen from above, each lower level of detail (e.g. layer 1) is generated by filtering the upper level of details (e.g. layer 0).

Fig. 12 as taught by Sanz-Pastor, also reproduced below, explicitly shows *temporarily storing each lower level of the mipmap data in the tile buffer.*

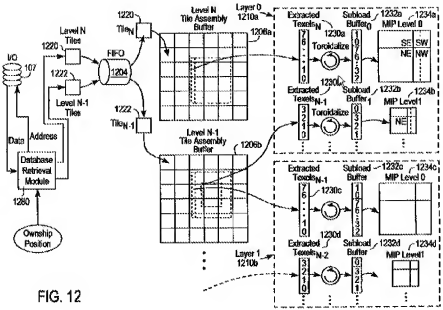

FIG. 12

Sanz-Pastor fails to explicitly teach *means for storing each lower level of the mipmap data in a system main memory, wherein the filtering means and the temporary storing means generate a predetermined number of mipmap levels to form the mipmap chain of the texture images*. However, in the same field of endeavor, Solomon teaches a method for allocating texture data and temporarily storing texture tile in a tile buffer (232, 234, or 236, see Fig. 2, col. 15, line 56 to col. 16, line 4), which is also stored in a main memory 104 as shown in Fig. 2.

Solomon further teaches the filtering means and the temporary storing means generate a predetermined number of mipmap levels to form the mipmap chain of the texture images (col. 15, lines 1-10, and col. 16, lines 16-33, also Figs. 3, 8, and 9, and their disclosure).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Hau H Nguyen/

Primary Examiner, Art Unit 2628

Conferees:

/Kee M Tung/

Supervisory Patent Examiner, Art Unit 2628

/U. C./

Supervisory Patent Examiner, Art Unit 2628